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SNOW SURVEYS AND IRRIGATION WATER FORECASTS  
FOR MISSOURI AND ARKANSAS RIVERS

Soil Conservation Service

U. S. Department of Agriculture

Washington, D. C.

The following data pertaining to snow surveys and irrigation water-supply forecasts are provided by Bureau of Agricultural Engineering of the U. S. Department of Agriculture, in cooperation with State departments, other Federal bureaus and local organizations. The snow measurements are made principally by field personnel of the following organizations: Forest Service, National Park Service, Bureau of Reclamation and State Experiment Stations. This work is otherwise conducted cooperatively with the State Engineers of Wyoming and Colorado, and various municipalities, irrigation associations, power companies and others. Precipitation records are supplied by the U. S. Weather Bureau.

Precipitation on the watershed of the Missouri and its tributaries in western Montana was below normal during February and for the period from October 1 to March 1, the accumulated precipitation was 79 percent of normal. In the eastern part of the State the precipitation during this period was slightly above normal. On the east slope of the Rocky Mountains in Wyoming the precipitation from October 1 to March 1, was about 0.5 inch above normal but during February it was generally deficient. Precipitation in the mountain areas of Colorado was 0.6 inch above normal during the period from October 1 to March 1, and was slightly above normal during February.

Reservoir storage on the North Platte River in Wyoming is more than twice as great as it was last year at this time. Storage in Jackson Lake and Shoshone Reservoir, however, is less than last year by 23 and 13 percent, respectively. Storage on the Upper South Platte is about 10 percent less than last year and on the Platte below Denver is 25 percent less than last year. On the Poudre the storage is slightly greater than it was at this time in 1937. Irrigation water in storage on the Upper Arkansas is about half of what it was last year while on the lower Arkansas there is practically no water in storage.

Moisture content of soil in the mountain areas in Wyoming is the best in seven years, but in the eastern plains area it is below normal. Soil moisture conditions on the South Platte in Colorado are satisfactory but on the Arkansas are from poor to fair.

The water content of the snow on the watersheds of the Yellowstone, Jefferson, Madison and Gallatin Rivers in Montana and the Bighorn in Wyoming is slightly greater than it was last year at this time but it is considerably less than it was on March 1, 1936. On the watershed of the North Platte in Colorado and Wyoming the water content of the snow is 25 percent greater than it was on March 1, 1937, and 10 percent less than it was on March 1, 1936. On the Laramie, a tributary of the North Platte, it is 20 percent greater than last year. On the South Platte in Colorado, the water content of the snow is 80 percent greater than last year but it should be noted that the location of several of the courses has been changed which may tend to exaggerate the difference. The indications are that a satisfactory runoff will occur this year if the snowfall is normal or better during the next two months. Although the water content of the snow on the Arkansas drainage is the same as last year at this time, it is 40 percent less than it was on March 1, 1936, and unless conditions improve the runoff from the Arkansas watershed will be below normal.



of business and education. The business of the country is being conducted in a manner which is not only profitable but also beneficial to the community. The government is doing its best to maintain the peace and order of the country. The people are working hard to improve their living conditions. The future of the country is bright and full of hope.

The government is committed to the development of the country. It is working to improve the infrastructure and the economy. The people are encouraged to work together to achieve the common goals. The government is also working to improve the education system and the healthcare system. The future of the country is bright and full of hope.

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Summary of Federal and State Cooperative Snow Surveys  
Bureau of Agricultural Engineering, U. S. Dept. Agr.; Forest Service; Colo. Agri. Expt. Station  
Issued Mar. 10, 1938. Colo. Expt. Station, Fort Collins, Colo.

No.	Main Drainage and Snow Course	Local Drainage	State	Locality	Description	Elev.	National Forest	Mar. 1 Snow Course Measurements					
								Av. Snow Depth 1936	In. 1936	Av. Snow Depth 1937	In. 1937	Av. Water Content 1936	In. 1936
	MISSOURI RIVER												
	TENNILE CREEK												
	Chessman Res.	Tennile	Mont.	15mi. SW. Helena	2-8N-5W	6200	Helena	13.2	21.4	14.8	3.8	5.7	3.9
	Tennile Cr. Lower	"	"	20mi. SW. Helena	13-8N-6W	6250	"	20.8	26.3	15.6	5.0	6.0	3.3
	Tennile Cr. Middle	"	"	"	13-8N-6W	6800	"	28.1	37.5	24.2	6.7	9.1	5.7
	Tennile Cr. Upper	"	"	"	19-8N-5W	8000	"	33.0	40.6	27.2	8.5	10.4	7.6
	L. PRICKLY PEAR CR.												
	Stemple Pass	L. Prickly Pear	"	Stemple Pass	16-13N-7W	6900	"	37.2	33.3	33.7	9.5	7.2	9.2
	SMITH RIVER												
	King's Hill	Moose Cr.	"	6mi. NE. Barzee	35-13N-7E	7950	Jefferson	48.4	40.1	35.8	12.6	8.4	10.6
	SUN RIVER												
	Goat Mountain	South Fork	"	40mi. SW. Augusta	47-2N112-9W	7000	Lewis & Clark	31.7	32.8	28.2	7.7	8.2	7.2
	MARIAS RIVER												
	Desert Mountain	M. Fk. Flathead	"	6mi. S. Belton	24-31N-19W	5600	Flat Head	---	50.7	37.0	---	15.3	10.7
	Marias Pass	Two Medicine	"	Summit	48-3N113-3W	5250	Glacier NP.	51.1	52.0	44.0	14.4	16.0	15.6
	MILK RIVER												
	Grace Lake	Bowman Cr.	"	Bowman L.	14-35N-19W	4500	Glacier NP.	---	51.7	---	---	14.8	---
	Kintla Creek #4	Kintla Cr.	"	Kintla L.	6-37N-21W	4300	Glacier NP.	---	35.3	---	---	10.7	---
	YELLOWSTONE RIVER												
	Blacktail Deer Cr.	Yellowstone	Wyo.	10mi. SE. M. Hot Sp.	44-9N110-4W	7000	Yel. Nat. P.	---	---	34.0	---	---	9.5
	Camp Senia	W. Br. Rock Cr.	Mont.	10mi. W. Red Ldge.	2-8S-18E	7870	Custer	---	17.6	14.4	---	3.9	3.0
	Canyon	Tower Cr.	Wyo.	8mi. N. Canyon Jct.	44-7N110-5W	7750	Yel. Nat. P.	---	---	---	---	---	---
	Cooke City	Clark Fork	Mont.	Cooke City	25-9S-14E	7400	Absaroka	---	28.0	26.0	---	6.4	7.0
	Crevice Mtn. #1	Yellowstone	Mont.	6mi. E. Gardiner	26-9S-9E	8400	Yel. Nat. P.	---	---	---	---	---	---
	Crevice Mtn. #2	Yellowstone	Mont.	6mi. E. Gardiner	25-9S-9E	8200	"	---	---	---	---	---	---
	Beaver Dams	Yellowstone	Wyo.	12mi. SE. M. Hot Sp.	44-2N110-5W	6500	"	---	---	25.0	---	---	6.7
	Lake Camp	Pelican	Wyo.	3mi. NE. Fishing Br.	44-6N110-4W	7850	"	---	35.9	---	---	6.5	---
	Lupine Creek	Lava Cr.	Wyo.	6mi. SE. M. Hot Sp.	44-9N110-6W	7700	"	---	---	30.0	---	---	7.5







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								Av. Snow Depth	Av. Water Content	1936	1937	1938	1938
								In.	In.	In.	In.	In.	In.
<b>JEFFERSON RIVER</b>													
	Camp Creek	Red Rock	Idaho	Monida Pass	21-13N-36E	6800	Targhee	35.0	30.9	40.6	---	8.5	11.9
	*East Fork R.S.	East Fork	Mont.	15mi.NE. Sula	16-2N-17W	5400	Bitterroot	---	20.2	21.0	---	4.2	5.8
	Elkhorn Hot Spgs.	Wise River	"	Elkhorn Hot Spgs	15-4S-12W	8450	Beaver Head	27.9	24.8	26.6	8.0	6.2	6.8
	Gibbons Pass	N.Fk.Big Hole	"	Gibbons Pass	4-2S-19W	7100	"	67.4	56.5	52.2	20.4	15.3	16.8
	*Moose Creek	Tie Creek	Idaho	Gibbons Pass	22-2N-21E	6200	Salmon	---	47.9	37.4	---	11.9	11.2
	Pipestone Pass	Pipestone Cr.	Mont.	12mi.S.Butte	11-1N-7W	7200	Deer Lodge	---	---	12.0	---	---	2.8
	Storm Lake	Warm Spgs.Cr.	"	20mi.W.Anaconda	19-4N-13W	8135	"	---	15.2	---	---	3.1	---
<b>MADISON RIVER</b>													
	Aster Creek	Aster Creek	Wyo.	6mi.SE.Lewis L.	44-3N11C-6W	7700	Yel.Nat.P.	80.0	61.5	81.0	29.5	19.9	25.9
	Big Springs	North Fork	Idaho	6mi.SE.L.Henry	34-14N-44E	6500	Targhee	65.2	63.1	53.0	21.9	17.6	14.8
	Hebgen Dam	Madison River	Mont.	Hebgen Res.	22-11S-3E	6550	Gallatin	47.8	46.5	45.8	15.2	13.1	14.4
	Lewis L.Divide	Falls River	Wyo.	6mi.SW.Lewis L.	44-2N110.7W	7900	Yel.Nat.P.	108.0	90.0	107.0	38.5	25.0	35.4
	Norris Basin	Gibbon River	"	Norris Basin	44-5N110.7W	7500	"	---	46.1	52.5	15.1	13.4	16.8
	Twenty-One Mile	Gallatin R.	Mont.	N.W.Cor.Yel.N.P.	1-11S-5E	7150	"	52.9	---	---	---	---	9.6
	Valley View	North Fork	Idaho	Targhee Pass	7-15N-44E	6500	Targhee	---	---	---	---	---	---
	West Yellowstone	South Fork	Mont.	W.Yellowstone	34-13S-5E	6700	Gallatin	46.4	39.5	34.0	13.7	11.3	---
<b>GALLATIN RIVER</b>													
	Devil's Slide	Jackson Cr.	Mont.	25mi.S.Pozeman	14-5S-6E	8100	Gallatin	---	47.6	49.7	---	12.2	13.6
	Hood Meadow	"	"	20mi.S.Pozeman	22-4S-6E	6600	"	26.7	23.1	22.9	6.6	6.0	5.3
	Hood Meadow Extn.	"	"	20mi.S.Pozeman	22-4S-6E	6600	"	---	---	23.0	---	---	5.3
	Mystic Lake No.1	Bear Creek	"	15mi.SE.Pozeman	31-3S-7E	6600	"	---	19.5	18.0	5.4	4.0	5.4
	Mystic Lake No.2	"	"	15mi.SE.Pozeman	31-3S-7E	6600	"	---	20.0	17.4	---	3.9	4.9
	Specimen Creek	Gallatin R.	"	NW.Cor.Yel.N.P.	25-9S-5E	6850	Yel.Nat.P.	30.2	---	---	8.0	---	---
	Upper Hyalite	Jackson Cr.	"	20mi.S.Pozeman	25-4S-6E	6760	Gallatin	26.7	---	---	6.9	---	---

\*Adjacent Drainage







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				Locality					Av. Snow Depth	Av. Water Content	1936	1937	1936	1937
							Feet		In.	In.	In.	In.	In.	In.
BIGHORN RIVER														
19	Brooks Lake No. 2	Wind River	Wyo.	Brooks Lake	23-44N-110W	9200	Washakie		44.5	49.3		11.9	14.4	
16	Ranger Creek	Ranger Cr.	"	32mi. SW. Sheridan	32-53N-88W	8800	Bighorn		39.7			5.7		
22	Roaring Fork	Roaring Fk.	"	20mi. SW. Lander	7-31N-101W	10200	Washakie		13.5	17.4		4.1	2.6	
15	Shell Creek R.S.	Shell Creek	"	Shell Creek R.S.	19-53N-88W	7700	Bighorn		30.0			3.7		
20	Sheridan Cr. R.S.	Sheridan Cr.	"	Sheridan Cr. R.S.	3-42N-109W	7500	Washakie		19.3	14.8		3.2	3.3	
21	Whorten Meadow	Roaring Fk.	"	21mi. SW. Lander	18-31N-101W	9200	Washakie		12.0	6.7		3.0	1.5	
POWDER RIVER														
30	Red Fork	Middle Fork	"	36mi. W. Powder R.	18-43N-85W	7500	Off Forest		40.8	25.6		9.7	5.8	
NO. PLATTE RIVER														
51	Big Creek Lake	Big Creek	Colo.	6mi. SW. Pearl	9-11N-82W	9000	Routt		42.6	32.9		9.9	9.0	
7	Bottle Creek	Encampmt Cr.	Wyo.	8mi. W. Encampmt	24-14N-85W	8200	Medicine Bow			44.3			13.2	
8	Columbine Lodge	Harrison Cr.	Colo.	Rbt. Ears Pass	21-5N-82W	9300	Routt	86.4	59.6	59.1	29.0	15.0	18.4	
38	N. Barrett Cr. #2	N. Barrett Cr.	Wyo.	Cent/Saratoga	30-16N-80W	9400	Medicine Bow		46.5	58.6		11.9#	19.9	
37	North French Cr.	N. French Cr.	"	"	27-16N-80W	10200	Medicine Bow			76.8			30.4	
9	Old Battle	Encampmt Cr.	"	12mi. W. Encampmt	29-14N-85W	9800	Medicine Bow		98.0	69.4		30.1	24.4	
7	Park View	Illinois Cr.	Colo.	15mi. S. Rand	24-5N-78W	9200	Routt	43.0	27.6	31.8	9.7	8.7	9.1	
39	Ryan Park #2	N. Barrett Cr.	Wyo.	Cent/Saratoga	34-16N-81W	8400	Medicine Bow		27.5#	38.9		6.9#	11.3	
8	Webber Springs	Encampmt Cr.	"	10mi. W. Encampmt	27-14N-85W	9000	Medicine Bow			45.2			13.8	
1	Cameron Pass	Michigan Cr.	Colo.	Cameron Pass	2-6N-76W	10300	Roosevelt		41.2	54.3		12.4	20.2	
SWEETWATER RIVER														
29	Grannier Meadows	Rock Creek	Wyo.	9mi. N. South Pass	19-30N-100W	9000	Washakie		40.8	30.9		9.7	7.4	

#Readings from original course







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				State	Locality				1936	In.	1937	In.	1938	1937
LARAMIE RIVER														
3	Brooklyn Lake	Nash Fork	Wyo.	15mi. W. Centennial	11-16N-79W	10200	Medicine Bow			58.0	53.7		18.2	19.1
4	W. Port. G-P Tunnel	Laramie R.	Colo.	5mi. N. Chambers L.	7-8N-75W	8600	Roosevelt			25.4	27.8		5.9	8.0
11	Fox Park	Fox Creek	Wyo.	Fox Park	21-13N-78W	9200	Medicine Bow			22.8	31.0		5.2	9.1
36	Hairpin Turn #2	Nash Fork	"	5mi. NW. Centennial	24-16N-79W	9500	"				30.0			8.6
35	Libby Lodge #2	Libby Cr.	"	3mi. NW. Centennial	29-16N-78W	8700	"				23.5			5.7
34*	Pole Mountain #2	Crow Cr.	"	12mi. SE. Laramie	35-15N-72W	8700	"				8.6#	22.8	1.4#	5.5
SO. PLATTE RIVER														
3	Big South	Poudre R.	Colo.	3mi. E. Chambers L.	33-8N-75W	8600	Roosevelt				5.5			1.7
1	Cameron Pass	"	"	9mi. W. Chambers L.	2-6N-76W	10300	"			41.2	54.3		12.4	20.2
2	Chambers Lake	"	"	2mi. E. Chambers L.	6-7N-75W	9000	"			12.6	20.0		3.4	5.9
50	Deadman Hill	N. Poudre R.	"	12mi. W. R. Feather	26-10N-75W	10950	"			40.1	43.6		9.7	12.0
71	Deadman Hill #2	"	"	10mi. W. R.	6-9N-74W	10200	"				36.3			9.6
68	Hour Glass Lake	Lit. S. Poudre	"	5mi. NW. Pingree P.	18-7N-73W	9500	"				22.3			5.2
5	E. Port. Moffat T.	S. Boulder Cr.	"	1mi. SW. E. Portal	2-2S-74W	9400	Arapaho			4.3	9.6		0.7	3.2
15	Fairplay	S. Platte	"	Fairplay	33-9S-77W	10000	Pike				T.			T.
67	Fall River	Fall River	"	15mi. W. Estes P.	6-5N-74W	10600	Ry. Mtn. N.P.				56.5			17.2
14	Hoosier Pass	S. Platte	"	Hoosier Pass	13-8S-78W	11400	Pike			25.4	33.9		4.8	8.0
57	Jefferson Creek	Jefferson Cr.	"	4mi. NW. Jeff.	23-7S-76W	10050	Pike			4.6			0.8	
61	Loveland Pass #2	Clear Cr.	"	12mi. W. Si. Plume	27-4S-76W	10100	Arapaho			33.1#	41.7		7.8#	11.3
34	Pole Mountain #2	Crow Cr.	Wyo.	12mi. SE. Laramie	35-15N-72W	8700	Medicine Bow			8.6#	22.8		1.4#	5.5
66	University Camp #2	N. Boulder	Colo.	8mi. SW. Ward	28-1N-73W	10300	Roosevelt			0.6#	48.3		0.0#	16.3
41	Wild Basin	N. St. Vrain	"	4mi. W. Allens P.	24-3N-74W	10000	Ry. Mtn. N.P.			31.2	33.2		7.6	9.1
ARKANSAS RIVER														
17*	Fremont Pass	E. Fork Ark. R.	Colo.	Fremont Pass	2-8S-79W	11300	Arapaho	68.6	42.8	47.8	15.6		10.8	12.4
42*	Marshall Creek	Poncha Cr.	"	Marshall Pass	24-48N-6E	10800	Cochetopa	56.8	40.6	34.0	19.1		9.5	7.1
43	Poncha Creek	Poncha Cr.	"	1mi. E. Mar. Pass	19-48N-7E	10500	Cochetopa	40.2	22.1	26.2	12.5		7.0	6.1
19	Tennessee Pass	Tennessee Fk.	"	1mi. E. Tenn. Pass	21-8S-80W	10200	Cochetopa	46.7	24.8	32.9	11.8		6.6	6.5
21	Twin Lakes Tunnel	Lake Cr.	"	16mi. W. Tw. Lakes	22-11S-82W	10100	Cochetopa				33.4			10.4

\*Adjacent Drainage

#Readings from original course.

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